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Machine Vision: Processing, Components, and Systems

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Computer vision is a highly regarded science that obtains information or measurements, and improves storage efficiency from images. Sufficient computing possibilities are now found in industrial setups, surveillance, and even consumer markets, allowing both image/video capture and real-time processing. Instead of producing another image or video, data is produced that influences decisions. Smart cameras are found when the system is completely self-contained. The particular challenge of vision systems and smart cameras is the demand for multiskill: a vision system needs hardware, (embedded) software, optics, communication means, communication protocols, a (efficient) power supply, and last but not least, it has to run algorithms to perform an application. In an aim to bring together the various skills, processing, and components that are needed for vision systems, we organized this Special Section on Machine Vision: Processing, Components, and Systems.

In this special section of *Optical Engineering*, nine papers have been accepted by the peer-review procedure. Those nine papers explore the current state of the art in sensing and recognition technologies of machine vision. This area is still developing based on the recent progress of imaging devices and collection of real data in computer networks. We are sure that the research efforts in this area will strongly contribute to innovations in daily human life and industry.

We would like to express our sincere thanks to all the reviewers who have evaluated the submissions with high-quality expertise and have provided constructive comments to all the submitted papers to improve the presented research.

Richard Kleihorst received his PhD degree in electrical engineering from Delft University of Technology, the Netherlands, in 1994. In 1994 he joined the VLSI design group of Philips Research Laboratories. In 2006 he joined NXP Semiconductors Research. In 2009 he became an honorary professor at Ghent University, Belgium. In 2009 he joined the remote sensing technology group of VITO NV, Belgium, working as principal investigator for the Proba-V satellite, and later innovating in visual sensor network technology. He has coauthored more than 100 scientific publications ranging from books, journals, and conferences to public publications. He holds more than 50 patent applications.

Hideo Saito received his PhD degree in electrical engineering from Keio University, Japan, in 1992. From 1997 to 1999, he joined the Virtualized Reality Project in the Robotics Institute, Carnegie Mellon University, as a visiting researcher. Since 2006, he has been a full professor in the Department of Information and Computer Science, Keio University. He is now serving as program cochair of the Asian Conference on Computer Vision in 2014. He is president of the MVA Organization, which currently organizes the 14th IAPR International Conference on Machine Vision Applications. His research interests include computer vision, mixed reality, virtual reality, and 3-D video analysis and synthesis. He is author or coauthor of over 300 technical scientific papers published in books, journals, and conference proceedings.